

PATENT CLAIMS

1. A method for enforcing the fail-silent property in the time domain of remote communication computers (111, ..., 114) of a fault-tolerant distributed computer system, in which a plurality of remote computers are connected via a distributor unit (101, 102), each remote computer has an independent communications control unit (210) with the corresponding connections to the communication channels, and the access to the communication channels occurs by a cyclical time-division multiple access method characterized in that

the at least one distributor unit (101, 102) makes sure, by virtue of the correct transmission behavior of the remote computer (111, ..., 114) that is known a priori by it, that a remote computer can only send successfully to the other remote computers within its statically assigned time slice.
2. The method according to claim 1, further further characterized in that the at least one distributor unit (101, 102) switches from the "unsynchronized" state, in which receiving is possible via all input ports (311), after receiving a correct message, to the "synchronized" state, in which receiving is only possible via one input port during the time slice statically assigned to this input port.
3. The method according to claim 1 or 2, further characterized in that the at

least one distributor unit (101, 102) switches from the "synchronized" state to the "unsynchronized" state when no correct message has been received since the last initialization message at any of its input ports (311) within an a priori specified time interval.

4. The method according to one or more of claims 1 to 3, further characterized in that in a distributor unit (101, 102) the content of arriving messages is evaluated as an additional fault recognition.
5. The method according to one or more of claims 1 to 5, further characterized in that the at least one distributor unit (101, 102) assumes the "unsynchronized" state after "power-up".
6. The method according to one or more of claims 1 to 6, further characterized in that the at least one distributor unit (101, 102) converts the arriving physical signals into digital form, using the local clock of the distributor unit, and converts them back into the physical form before sending them.
7. The method according to one or more of claims 1 to 6, further characterized in that distributor units (101, 102) are connected to each other via communication channels (201, 202) in order to enable the power-up and clock synchronization of a distributor unit, even when no messages arrive at its own connections.
8. The method according to one or more of claims 1 to 6, further characterized

in that distributor units are connected via dedicated communication channels (141, 142) to at least one maintenance computer, which performs the parameterization of the distributor units and monitors the correct functioning of the distributor units during operation.

9. A distributor unit (101, 102) of a fault-tolerant distributed computer system, by which a plurality of remote computers (111, ..., 114) are connected to each other, each remote computer has an independent communications control unit (211) with corresponding connections to the communication channels (201, 202), and access to the communication channels occurs by a cyclical time-division multiple access method,

further characterized in that

the at least one distributor unit (101, 102) is designed to make sure, by virtue of the proper transmission behavior of the remote computer that is known a priori by it, that a remote computer can only send successfully to the other remote computers within its statically assigned time slice.

10. The distributor unit (101, 102) according to claim 9, designed to carry out the method according to one of claims 2 to 8.